A SANITARY AND FIRE-PROOF FLOOR-CEILING.

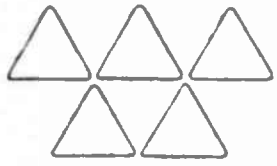

Fig. 1.

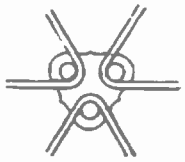

Fig. 2.

Fig. 3.

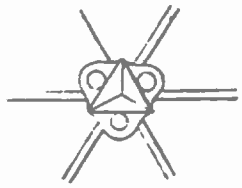

Fig. 4.

Fig. 5

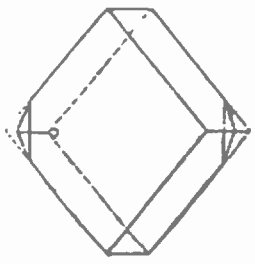

Fig. 6.

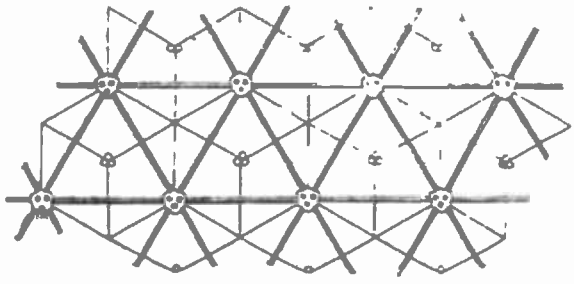

Fig. 7

Fig. 8.

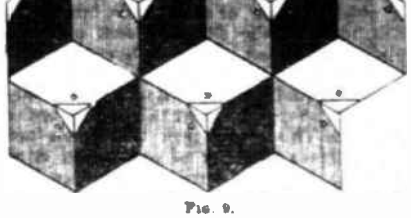

Fig. 9.

Fig 10

ing pursuits (such as obtaining money upon false pretences) for which we "have found no better substitute." The charge of "intention to do damage" is ridiculous, whoever made it. No intention is at all clear from these gentry's designs, beyond the far from singular one of doing nothing they can by possibility get paid for without doing. So whatever substitutes for their pursuits I may find them, must, to "be feasible or conduce" (as Inigo said), have this peculiarity,—to occasion no work whatever on *their* part, only on mine, the manufacturers' and the workmen's, to be (like their present elegant resources) such as they may have nothing to do with but to "specify" —and be paid for.

This flooring, then, will, I hope, be Paxtonian enough for them, consisting, as it does, of only *three* invariable elements or types, which may be supplied entire, as to both form and ornament, by the manufacturers, just like pantiles or paper-hangings. Exclusive of common bolts or rivets, here is but one brick or tile, one hoop-tie, and one small link or coupling-piece.

The hoop-ties are to be welded in the form of the musical instrument called a triangle, but of half-round iron, with the flat side inward; and fig. 1 shows their arrangement in the ceiling.

The short link or coupling, fig. 2, is to hold together, by three rivets or bolts, the adjacent angles of three of these triangles; and it may either form a pair of jaws, both like that in fig. 2; or the lower plate may be punched out in the shape of fig. 3, its ends turned up at right angles, rounded in a swage, passed through the three holes of the upper plate, and rivetted above.

The triangles will thus be united into a continuous web tightly stretched to the four wall-plates, as canvas to an embroidery frame. The plates may be very thin, but broad, their outer edges being convex arcs as deep as the thickness of the walls will permit, and of course they are so pulled in as to need no fastenings, only mitred and radiating joints.

The ceiling brick or tile will be understood from fig. 5, its underside, and fig. 6, its upper (represented transparent). Both these faces would, but for the truncation of one angle, be rhombi having their short diagonal to their long one as $\sqrt{2}$ to $\sqrt{3}$, which makes the angles very nearly 76½° and 101½°. The four edges are all to be bevelled, at angles of 52½° to one face, and 127½° to the other; and when the material is too brittle for arrises of 52½°, they may be replaced by a narrow face inclined 142½° to the tile's main face, and perpendicular to its edge face. The four short edges are all inclined 45° to the tile's faces, and all parallel. The sharpness of two of them is 60°, and of the other two 120°; and the two latter have each *one-third* of its length removed by the small truncation. These truncation planes are parallel, equal, and similar, each perpendicular to the short edges, and inclined 135° to the tile's faces, and each forming a triangle, with an angle of 120°, and two angles of 30° (the latter truncated if the arrises of 52½° are so). The ratio of the tile's thickness to its size is indefinite. The vent-hole is close to one of the angles of 101½°, and going through perpendicular to the main faces; and I should think a bore of half an inch at the entrance, diminishing to a quarter at the exit, ample for the largest tiles that can be made. Except this hole, the tile presents no more work in moulding than a common brick.

Fig. 8. Three tiles in their position. All their faces will be inclined 45° to the horizon; all the margins thereof, 26° 34′ (or 2 horizontal to 1 vertical). All their edge planes will be vertical, and all the small truncations horizontal; the lower forming the feet on which they stand, and the upper the heads to support the flooring.

Fig. 4. The manner in which three tiles' feet stand on each of the coupling links, between its three rivet or bolt heads.

Fig. 7. The appearance of the finished ceiling. To fit the sides of rectangular rooms, or any walls forming angles that are multiples of 30°, you require only two kinds of half-tiles, long and short halves, cut by their two diagonals.

Fig. 9. The naked floor: on the flattened summits of which you may lay sawn or split slates, or tiles as small as those of the ceiling, yet leaving free passage for the foul air in every direction to its provided wall outlets. You can also lay, in any direction, smoke or hot-water pipes, to warm the room above, and slightly assist the ventilation of that below. To get more height for these, as well as more bearing for the floor-covering, it will be well, in superior buildings, to place on the protuberances, spreading circular capitals, with triangular depressions in their underside to fit on the pyramidal summits.

A cementitious floor-coating would always be proper for rendering it air-tight, whatever the material beneath.

In large and superior works, all effects of the metallic *expansion* and *contraction*, may be perfectly *compensated* as follows:—Dovetend the three sides of each triangle, as in Fig. 10, by a distender of cast zinc, so that as the said triangle expands, the zinc (expanding more than wrought iron, in the ratio of 7 to 3), may push out the sides more, and keep the three angles at an invariable distance. To produce this compensation, the zinc arms must be of such length as to increase the original angles of the triangle to about 110°, and make the new ones 130.° I have not reckoned this very exactly. I need not say how much these zinc castings will, if well treated, add to the richness of the ceiling.

The ceiling-tiles admitting any kind of clay, however coarse, and any kind of ornament applied to encaustic tiles, they may cost any sum from a penny to a guinea, and thus express, without change of form, any degree of ostentation, from that of the cottage

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